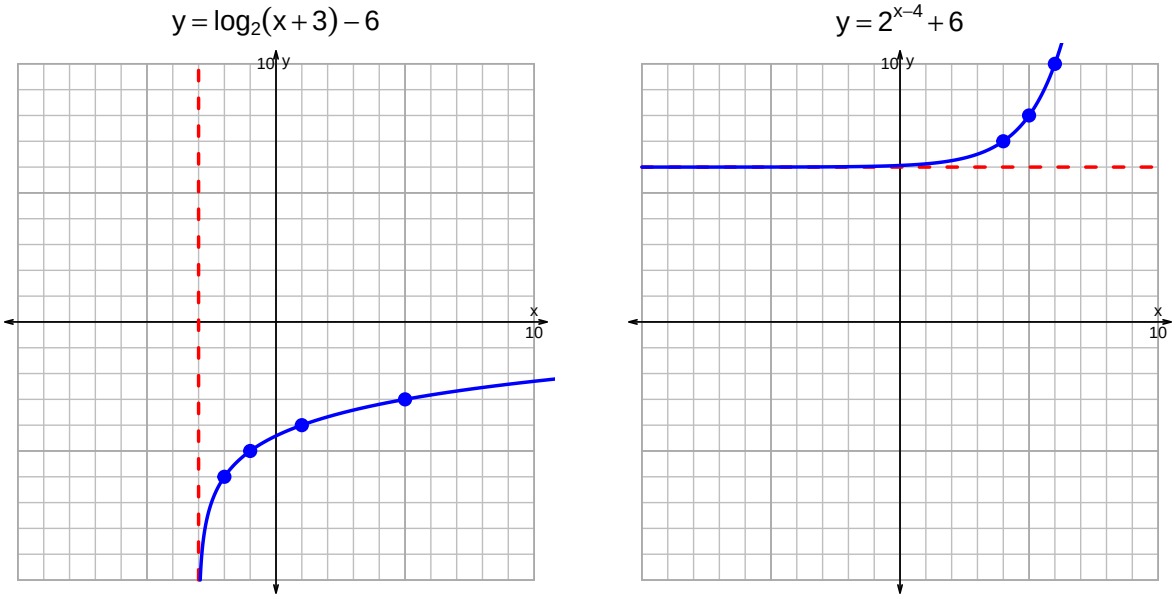
Name: Date:

S18QUIZ: EXP LOG (SLTN v233)

1. Graph $y = \log_2(x+3) - 6$ and $y = 2^{x-4} + 6$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-17 = \left(\frac{-3}{5}\right) \cdot 10^{7t/4}$$

Divide both sides by $\frac{-3}{5}$.

$$\frac{17 \cdot 5}{3} = 10^{7t/4}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{17 \cdot 5}{3}\right) = \frac{7t}{4}$$

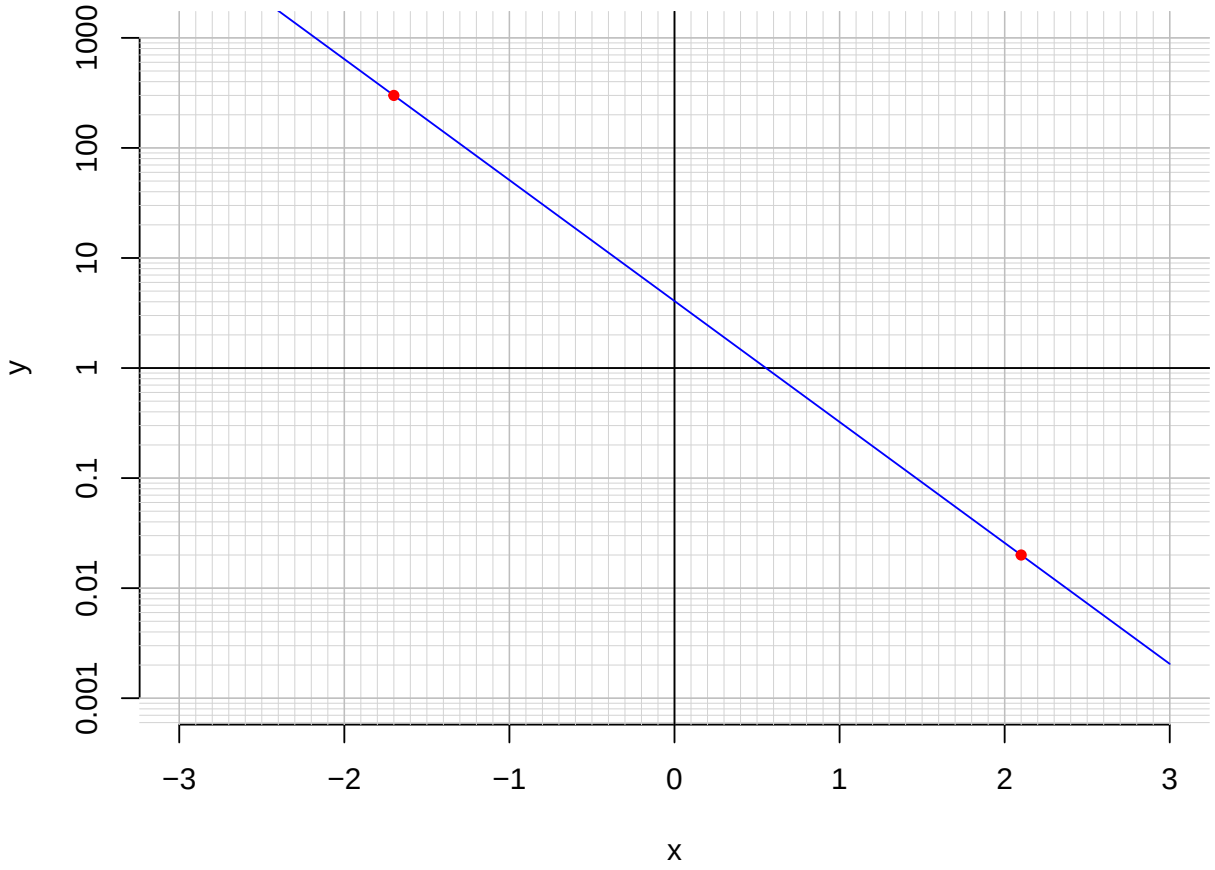
Divide both sides by $\frac{7}{4}$.

$$\frac{4}{7} \cdot \log_{10}\left(\frac{17 \cdot 5}{3}\right) = t$$

Switch sides.

$$t = \frac{4}{7} \cdot \log_{10}\left(\frac{17 \cdot 5}{3}\right)$$

3. An exponential function $f(x) = 4.06 \cdot e^{-2.53x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-1.7)$.

$$f(-1.7) = 300$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{2.53} \cdot \ln\left(\frac{x}{4.06}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.02)$.

$$f^{-1}(0.02) = 2.1$$